OFFICE COPY

CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

Vol. XV SEPTEMBER, 1943 No. 9

FIG. 58. An arrangement by Elizabeth Genrich using Sedums and Crassulas.

CACTUS AND SUCCULENT JOURNAL

Published and Owned by the Cactus and Succulent Society of America, Inc., Box 101, Pasadena, California. A monthly magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. Subscription $3.00 per year. Foreign $3.00 per year by international money order. Membership in the Cactus Society free with subscription. Mail application to SCOTT HASELTON, *Editor*, Box 101, Pasadena, Calif. *Editorial Staff:* THE ENTIRE SOCIETY. Entered as Second Class Matter at Pasadena, Calif., under act of March 3, 1879.

Vol. XV SEPTEMBER, 1943 No. 9

Affiliate Notes ..... Maybelle Place 130
Two Agaves from Southwestern Nevada and Eastern California ..... J. Pinckney Hester 131
Werdermann's "Brasilian und Seine Saulenkakteen" Thirteenth installment ..... Center Section
A Study in Growth Habit ..... Henry C. Shetrone 135
Cereusly Speaking ..... John E. C. Rodgers 136
What is the Cephalium of *Melocactus* ..... Dr. Leon Croizat 137
Spine Chats ..... Ladislaus Cutak 139

AFFILIATE NOTES

Mail your news items monthly to Mrs. Maybelle Place, 645 W. 40 Place, Los Angeles 37.

AMATEUR CACTUS AND SUCCULENT SOCIETY OF BRITISH COLUMBIA

"Dear Mrs. Place:

We hope you have not formed the opinion that our club is obsolete, for although we are not great in numbers, we make up for that in activity which consists of monthly meetings with speakers on various subjects and in addition hold field meets once a month during the summer in which the larger collections are visited by the membership and their friends. At each of those field meets we have demonstrations of grafting, potting, etc. Our regular meetings are fairly well attended and we have been fortunate in having various authorities address us on such subjects as fertilizers, insecticides, plant classification, soil mixture, etc. We also hold an occasional auction sale in which the members donate spare plants and the proceeds are used to defray club expenses.

"We have held one exhibition of Cacti and Succulents so far this year, in conjunction with one of the local flower shows in which the "Spiny Brutes" stole the show and were instrumental in increasing the membership of the club.

"Our pet peeve here in Canada is the restriction placed on the importation of cacti across the line. We are limited to 'occasional' purchases of up to five dollars in Canadian currency, this considerably hampers the possibility of acquiring specimen plants. This is of course due to war restrictions and as cactophiles we are looking forward to a better day when peace prevails and we may enjoy our hobby unrestricted.

"Those of us who subscribe to the JOURNAL look forward to its arrival each month and enjoy reading about the activities of the various clubs, also the many valuable articles on succulents and their culture, etc. Especially appreciated are the writings of our friends John Rodgers and Ladislaus Cutak.

"We hope in the near future to be able to see in the JOURNAL some pictures of some of the outstanding collections of British Columbia.

A. E. MARCHANTON."

SOUTHWEST CACTUS GROWERS

Met at Place's, Mr. and Mrs. Rush gave the third in their series of talks on Sedums. "Mexican Sedums from the Sedastrum Series, and Alamosana Series, showing about twelve plants. A contest for the best scrap-book collection of pictures of Succulent decorative arrangements was started, to close at the December Christmas Party, with a suitable award for the winner. From Ted Taylor in Hawaii, "In regards to the *Hylocereus,* I visited the Punahou School and inspected the famous hedge, that we have all heard so much about and no picture can do it justice. When I think of the nice clumps I had and then compare it with this fine growth, I had but a drop in a bucket. Walking along the sides where the hedge grows, it took me about twenty minutes, walking fast. I observed three species of *Hylocereus*: *triangularis* and *undatus* I know, but the other was similar with a fine powder-like covering. There was also a single clump of our old friend *macdonaldiae* and another single clump of *pteranthus*. Have seen lots of *undatus* growing elsewhere, sometimes as high as thirty or forty feet in trees, it seems quite common here."

HENRY SHAW CACTUS SOCIETY

The regular monthly meeting was held in the Museum Building at the Missouri Botanical Gardens. From Mr. Cutak's letter Aug. 7th, "I received the set of lessons authored by Mr. Marshall, and want to thank you for them in the name of the Society. Sunday we have our meeting and I'm thinking of reading the first lesson and elaborate on it so that our members may better understand it. I think I'll have our editor publish one lesson each month so that the few members that are unable to attend any of the meetings will have an opportunity to at least read them. I haven't heard from Bill Marshall for a long time and hope to get in touch shortly, but in the meantinme tell him I'm thinking of him constantly. This goes for the whole gang out in California."

I would like to add, that if Mr. Marshall's Lessons have not been sent to any of the Affiliates, they are available, so don't forget to write us.

IMPORTANT MEETING

The Annual Meeting of the National Cactus and Succulent Society of America will be held at the interesting home of Carl Brassfield in Van Nuys, October 10, at 1 p. m. The address is 14623 Sutton Street which is easy to locate near Ventura Blvd. in Van Nuys. The Nominating Committee will report its suggested officers for the next year and other nominations may be made from the floor. The host will furnish coffee to go with your lunch but he suggests that you bring your own camp stools and rocking chairs. Here is a chance to meet your war-harassed friends who are still hungry to talk cactus. See Carl's cactus garden. Remember the date because no other notice will be sent.

TWO AGAVES FROM SOUTHWESTERN NEVADA AND EASTERN CALIFORNIA

By J. PINCKNEY HESTER

Photos by Author

The thrill of making discoveries of new species is the main motive that lures this observer across unknown deserts and up strange mountains. In January, 1942, it was on such a mountain in southern Nevada that a beautiful new species of *Agave* was found and photographed. Invariably one's ecstacy is tempered by uncertainty. In this instance one wondered how such a spectacular species had so long escaped the educated eyes of scientific scouts. Consequently, many field trips were made before the following description could be written with assurance.

Agave eborispina sp. nov.

Plants acaulescent, sometimes solitary, usually cespitose, to 8 dm. in diameter, though usually much less; leaves fleshy, semi-rigid, lanceolate, 1.5-6 dm. long, 2-3.5 cm. wide, somewhat glaucous, barbellate, pungent, curved outward and upward, decurrent from 5 to 15 cm. (2 to 6 ins.) from Courge Green (21L3) to Silver Green (21F3)*, margins straight or somewhat repand, 3-5 barbs on each side, these very irregular in size and shape, often in grotesque forms, 5-17 mm. long, usually Ivory (10B2), (a decided peculiarity is that on the back of some leaves 2 cm. or more below the terminal spine there may be 1-3 knobs of Ivory spine material); terminal spine elongated, slender, pungent, straight or sinuate, brown in youth, Ivory in age, usually curved inward, 10-20 cm. (4 in. to 8 in.) long, 6-10 mm. wide at the base, the somewhat flattened upper surface bearing 2 minute parallel grooves separated by a tiny ridge and sandwiched between two other small ridges, the grooves being impressions of younger spines on the soft, juvenile spine material; terminal spine decurrent, 5-15 cm. (2 in. to 6 in.) long, separated from the herbaceous leaf material,—as are the barbs along the margins—by a narrow brown band, Port Wine (56J12); stalks of the inflorescence to 4.5 m. high, usually 2.5-3.5 m. tall, 5-7 cm. in diameter at the base, glaucous-green at first, often Pyrite Yellow (12L3) during flowering and fruiting periods; flowers yellow, usually spicate, rarely in small panicles, in pairs or clusters of 3-6 (10-20 on panicles); corolla-tube conic, 1-1.3 cm. long, 8-12 mm. in diameter at the base; perianth-segments 6, erect, appressed, attenuate, obtuse, free, 1-1.3 cm. long, 4-10 mm. wide at the base, Sunflower (9L4) below and Light Chrome (10L4) above; stamens 6; filaments stout, white, attenuate, about 2.2 cm. long, inserted on the midvein at the base of the petals; anthers versatile, Deep Chrome (9L7), 10 mm. long, 2 mm. wide; style stout, white, finally 2.5 cm. long, exserted about 1 cm., tip puberulent, the base triangular, each concave side harboring a minute pore in the axil of each inner petal, these pores excreting a clear nectar with a mild perfume; ovary 1.5-2 cm. long, 4-6 mm. in diameter, about Grapefruit (19L1); the dry fruit more or less fusiform, 3-celled, 1-1.4 cm. in diameter, 2-3 cm. long; seeds thin, flat, black, shining, somewhat rugose, 2-3 mm. wide, 2-4 mm. long, 1 mm. thick dorsally; hilum subbasal in a perimetal notch 1 mm. in diameter.

Planta perennis acaulescens caespitosa; folia carnosa lanceolata 2-3.5 cm. lata 1.5-6 dm. longa subrigida leviter glauca margine recta vel repanda et 3-5-dentata, dentibus irregularibus 5-17 mm. longis luteo-albidis, spina terminali decurrenti gracili recta vel sinuata incurva 10-20 cm. longa dorsaliter bicanaliculata; caulis florifer 2.5-4.5 m. altus; flores spicati vel paniculati flavi, tubo corolla conico 1-1.3 cm. longo base 8-12 mm. lato, segmentibus corollae erectis appressis attenuatis 4-10 mm. latis 1-1.3 cm. longis apice obtusis; staminibus robustis albis circa 2.2 cm. longis; stylo robusto albo circa 2.5 cm. longo exserto; fructus fusiformis trilocularis 1-1.4 cm. latus 2-3.5 cm. longus, seminibus late obovato-compressis 2-3 mm. latis 2-4 mm. longis nigris nitidis leviter rugulosis.

Type specimen deposited in the Dudley Herbarium, Stanford University, No. 285, 573, collected on Peek-a-boo Peak, Sheep Range Mountains, about 35 miles northwest of Las Vegas, Nevada, *J. Pinckney Hester,* July 22, 1942.

Herbarium material including leaf patterns, fruit, seeds and several photographs was sent to the following institutions: The U. S. National Herbarium; Dudley Herbarium; herbarium of Mr. Ira W. Clokey, South Pasadena, California; Missouri Botanical Garden, St. Louis, Missouri; the Arnold Arboretum, Jamaica Plain, Massachusetts; and the Boyce Thompson Southwestern Arboretum, Superior, Arizona. The latter place also received many living plants under Accession No. Q51. Photographs and several small plants were sent to the Huntington Botanical Gardens, San Marino, California.

Distribution: Known only from Sunrise and Sheep Range Mountains, Nevada, always in limestone areas with the roots wedged in the

*Color names and key numbers are from McGraw-Hill Book Company's "Dictionary of Color" by Maerz and Paul.

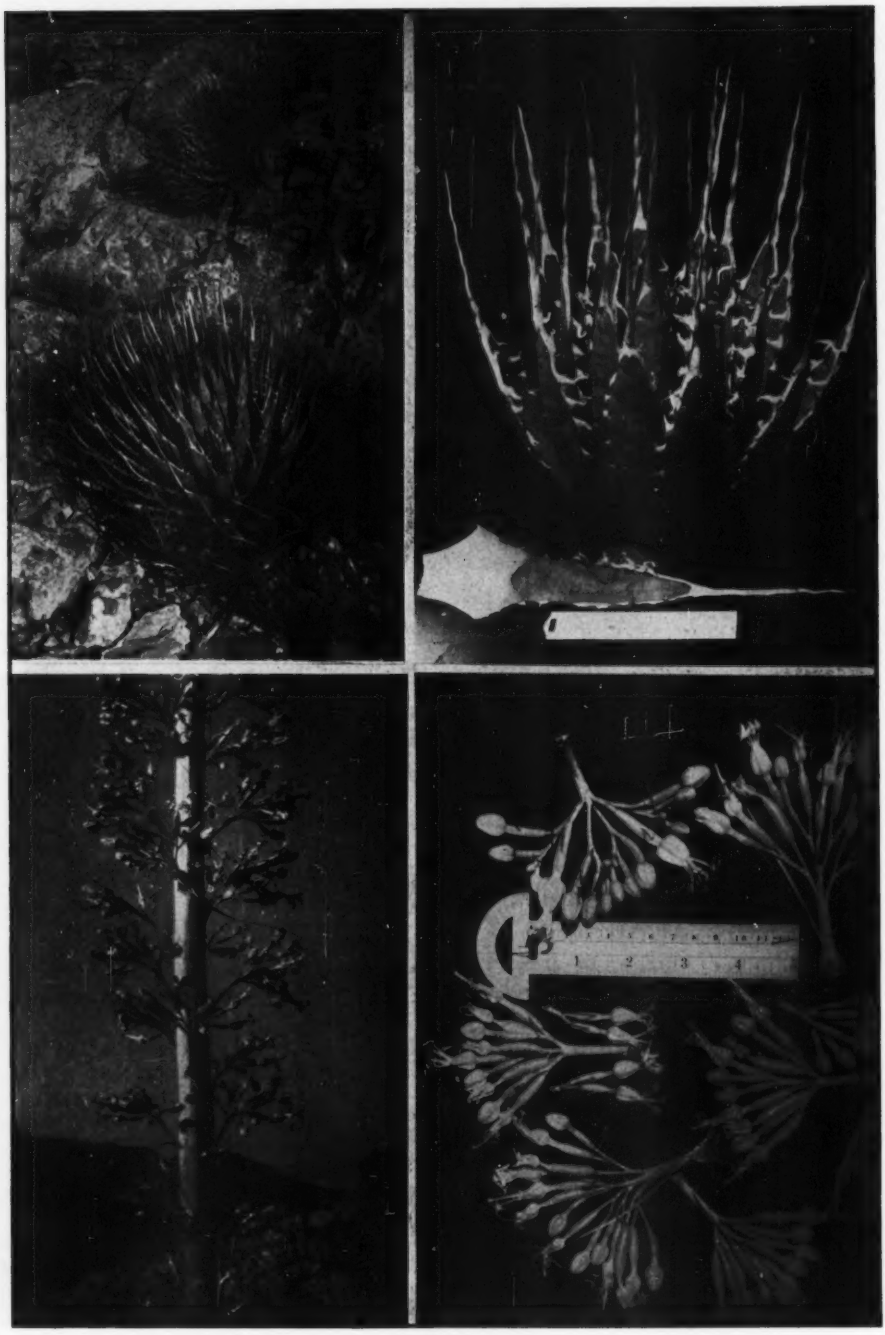


FIG. 59

UPPER LEFT: A habitat picture of *Agave eborispina*, with its roots always in crevices of limestone rocks. UPPER RIGHT: One of its typical forms with sinuate, long-decurrent tips and large marginal barbs. LOWER LEFT: Showing a rare paniculate form of flowering. Type locality Peek-a-boo Peak, Sheep Range Mountains, Nevada. LOWER RIGHT: Depicting flowers on little panicles, an unusual form of flowering.

crevices of rocks in situ. This species with terminal spines ⅓ to ⅔ of the total length of the leaf, and long, beautifully decurrent bases of the spine, probably originated as a mutant from what appears to be a subspecies of *A. nevadensis*. The latter plant flourishes in the mountains both southwest and northwest of the Sheep Range Mountains. The latter have not been well explored, and having been set aside recently as a military reservation, are out of bounds for civilians.

There are two leaf types among these plants, one having slimmer leaves and marginal barbs than the other, but they often grow side by side and share other characters so they are not separated here.

Agave nevadensis (Engelmann) Hester, comb. nov.

Agave utahensis Engelm. var. *nevadensis* Engelm. ex Greenman & Roush, Ann. Mo. Bot. Gard. *16*: 390. Pl. 32. 1929.

The history of this species had its origin in 1882 when S. B. & W. F. Parish of San Bernardino, California, sent specimens for identification to the Missouri Botanical Garden. Dr. Engelmann, later, in his unpublished notes, tentatively classified them as *Agave utahensis* var. *nevadensis*.

About 1929 Mr. W. I. Beecroft, of Escondido, California, sent two plants from some unknown locality in Nevada to the Missouri Botanical Garden for identification, and it is obvious that Greenman and Roush's description of var. *nevadensis* was based largely on those plants.

When the author, in January, 1942, found in southern Nevada what appeared to be an undescribed species of *Agave* and forwarded photographs to Dr. Ira L. Wiggins, and to Director Fred Gibson, Boyce Thompson Southwestern Arboretum, those gentlemen thought that they had seen a picture of a similar species, but neither could at once recall when or where. They, and Mr. Ira W. Clokey of South Pasadena, then individually seached the literature on *Agave* and found Greenman and Roush's description and photograph of var. *nevadensis*.

The author, now fairly frantic and famishing for facts, felt impelled to find and study the species in its type locality, the Ivanpah Mountains, and, if possible, the locality in Nevada whence came the Beecroft plants. An appeal to Mr. Beecroft elicited the information that he knew nothing of the plants except that he got them from a professional collector, a Mr. Barrett, who said the plants came from southern Nevada. All efforts to locate Mr. Barrett for further facts failed.

In travelling hundreds of miles over the deserts and mountains of southern Nevada the author failed to find any typical plants of *A. nevadensis*, but two closely related forms were found, one of them apparently very similar to, or identical with, the pictured Barrett plant. This may prove to be a subspecies of *A. nevadensis*. This will be described only after further field studies, for it is impossible to describe adequately any of the extremely variable species and subspecies of *Agave* without seeing and studying dozens, preferably hundreds of plants in their native hills.

The present Ivanpah Post Office and railway were not there in 1882, but the mountains in that region, including the New York Mountains, were explored to make sure that no species of *Agave* that might cause confusion flourishes there. As Greenman and Roush's description of this species is brief, being based, primarily, on two plants from some unknown locality in Nevada, and, on scanty, fragmentary type locality material acquired in 1882, the author decided to describe *Agave nevadensis* as it grows by the multiplied thousands over the limestone areas of the Ivanpah Mountains, in California.

Mature plants exceedingly variable in size, caulescent, usually cespitose, stoloniferous, 2.5-6 dm. in diameter; roots brown, fibrous; leaves gray-green, somewhat glaucous, rather fleshy, semi-rigid, divergent but curved inward at the tips, pungent, the lower surface smoothly convex, the upper surface convex below but nearly flat or shallowly concave above, usually linear-lanceolate, sometimes narrowed just above the fleshy pad, 10-25 cm. long and 2-3 cm. wide, margins usually repand, herbaceous, barbellate, with 4-6 white or gray barbs on each edge, these rudimentary below and to 5 mm. wide and 10 mm. long above, the base of all barbs, terminal spines, and decurrent base of terminal spine bordered with brown; terminal spine pungent, brown, sometimes gray above in age, usually the upper surface is somewhat flattened and bears 2 fine paralled grooves* or terminal spine impressions separated by a tiny ridge (often a

*By dissecting the bud or tightly constricted cluster of juvenile leaves at the heart of an Agave plant it becomes obvious that the groove in the base of each terminal spine is but the imprint made by the tip of the next shortest leaf or leaves, the impression being made while the base of the spine is yet immature, white, and tender. Short, robust spines thus have larger grooves than longer slimmer spines. When the terminal spines are extra long and slender, each leaf may clasp from two to four tips of shorter leaves. The tips leave impressions in the form of two minute, parallel grooves with a tiny ridge on either side and another one between the grooves. The coloration of terminal spines and marginal barbs begins at the tip and extends downward to the terminal base, thence to the tips of outer barbs, the barbs at the base of the leaf being the last to mature.

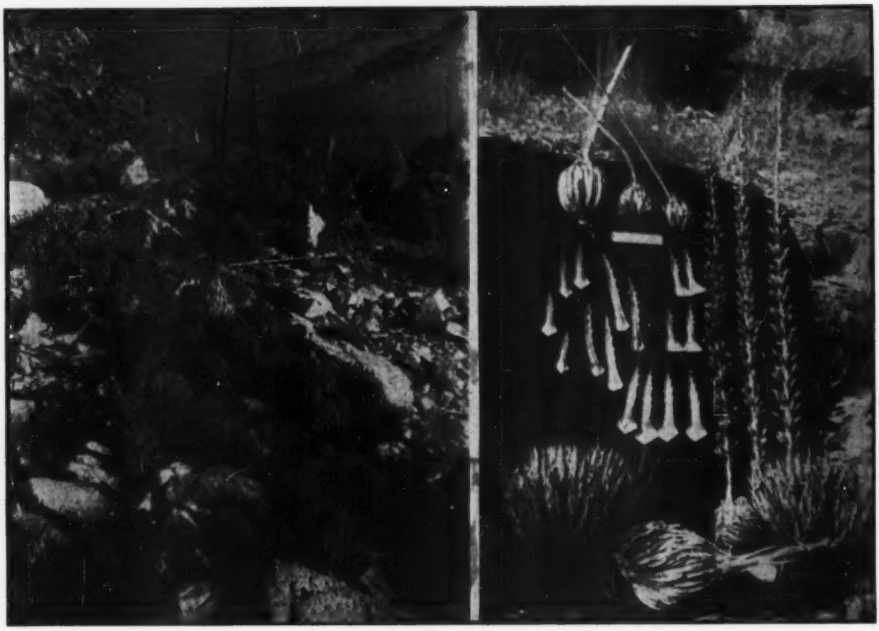


FIG. 60

LEFT: *Agave nevadensis,* showing its exuberant growth-habit in the type locality, Mescal Ridge, Ivanpah Mountains, California. RIGHT: Two live plants, the fruited portion of 3 stalks, the compact masses of 4 dead rosettes, and 4 each of 4 leaf patterns.

terminal spine may bear the partial impressions of 4 other spines but never more than two at any one point), the terminal spines 3-8.5 cm. long, usually 5-6 cm. long, often sinuate, sometimes decurrent 1-3 cm.; stalk of the inflorescence slender, spicate, 5 dm. to 3 m. tall, 5 cm. or less in diameter at the base, glaucous, gray-green at first, slowly changing during flowering and fruiting to Brass (11L6), then to Bronze Yellow (11L8); flowers yellow, tubular, 1-4 (usually in pairs), on short peduncles in axils of pungent, chartaceous bracts, the pedicels 4-10 mm. long and 3 mm. in diameter; perianth-segments 6, attenuate, erect, appressed, obtuse, with a little short, gray wool on the tip, 6 mm. wide at base and about 1.5 cm. long, united below to form a shallow cup, 1-2 mm. deep and 6 mm. in diameter; (the segments never flare but always clasp the exserted style and filaments to form a tube, Sulphur Yellow (10J1) below and 10K2 above; a tiny pore that excretes a clear, odorous nectar occurs in the axil of each inner perianth-segment; filaments 6, slender, attenuate, white, 2-3 cm. long, each medially attached at the base of a perianth-segment; anthers versatile, about 8 mm. long, 2 mm. in diameter, Popcorn (9J3) before and Sunflower (9L4) after dehiscence; style stout, attenuate, truncate, somewhat puberulent at the slightly enlarged triangular apex, 2-2.7 cm. long, 2-3 mm. in diameter at the base, finally exserted about 5 mm. beyond the perianth-segments; fruit a dry, 3-celled capsule, fusiform, each cell with 2 rows of seeds, partitions papery; seeds black, flat, shining, 1 mm. thick, 2-3 mm. wide 2.5-4 mm. long, the surface roughened by flattened papillae; hilum occupies a sub-basal notch 1 mm. in diameter, on the perimeter.

Type locality: Ivanpah Mountains, California.

Distribution: Ivanpah and Clark Mountains, California, where thousands if not millions of these plants flourish over limestone areas, usually with their roots tightly wedged in the crevices of rocks in situ, at elevations of from 5000 to 6000 feet; associated with Juniper, Pinyon Pine, *Opuntia erinacea, Echinocereus mojavensis, Coryphantha deserti,* and *Yucca brevifolia* (Joshua Tree).

Agave nevadensis has a remarkable and unmistakable habit character not shared by any other species of *Agave* known to the author. The leaves of other species, as they wither and die to produce flowers and fruit, usually retain their living attitudes, but the leaves of this species, as they die, curve up and inward to form a compact, globose mass around the base

of the flower stalk, always and forever.

Flowers occur in May, June, and July.

Herbarium material and photographs has been forwarded to the U. S. National Herbarium, the Arnold Arboretum, the herbarium of the University of California, Mr. Ira W. Clokey, and to the Boyce Thompson Southwestern Arboretum. The latter institution also received many living plants now growing there under accession number Q47.

The author is indebted to Mr. Ira W. Clokey, Director Fred Gibson of the Boyce Thompson Arboretum, and to Dr. Ira L. Wiggins, of Stanford University for aid and advice, and to the latter for suggestions concerning a specific name and the Latin diagnosis.

FROM THE CONSULATE GENERAL OF THE NETHERLANDS

"Dear Mr. Haselton,

I wish to thank you for printing in the July JOURNAL that wonderful article by L. Benson about the Goal and Methods of Systematic Botany. This is the kind of articles that will get us readers somewhere because stuff of this sort gives us the clue to many every day problems. I likewise greately enjoyed reading a recent article by Dr. Leon Croizat about the development of cactus areoles and spines. It was well written and well illustrated and altogether quite illuminating. Now that the European journals have become unavailable for a considerable length of time, it is all the more fortunate that the American Cactus and Succulent Journal carries on the study of succulents, and I congratulate you on your work."

Yours sincerely,

J. A. SCHUURMAN.

SPEND THE WINTER ON THE WARM CALIFORNIA DESERT

FOR RENT: A new five room furnished home on the desert (paved highway) in northeast corner of San Diego County in Little Borego Valley for rent $60 a month, October to May. Located on a 180 acre site of real desert land; wonderful climate, warm sunshine dry air, ideal spot for artist, writer, or just lover of desert. Water from own well, shower bath, toilet, butane gas, outdoor barbecue pit. No telephone, no electricity. Many interesting historical spots near by. Peace, contentment, rest, relaxation, quiet. D. C. Kemp, 607 S. Hill St., Los Angeles, Calif.

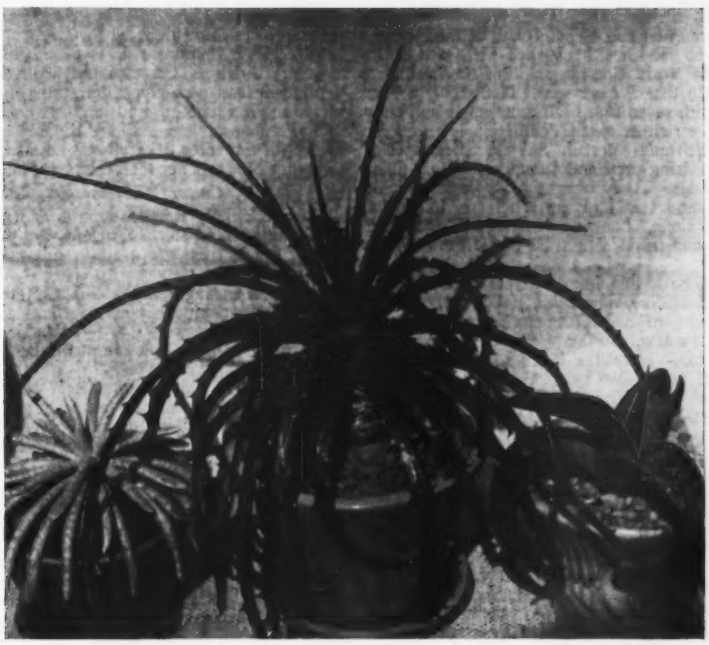
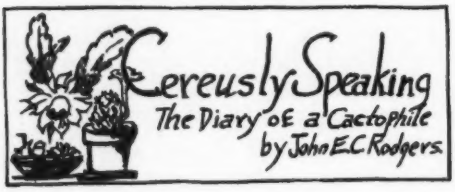


FIG. 61. A STUDY IN GROWTH HABIT by Henry C. Shetrone, Ohio.

LEFT TO RIGHT: *Senecio scaposus, Hechtia texensis,* and *Aloe dinteri.* These and some others of the succulents in cultivation persist in thrusting their leaf-tips downward. So pronounced is this tendency in *H. texensis* that one wonders how the root system withstands the upward heaving which would result where plants grow on level ground. *Senecio scaposus,* with its finger-like leaves encased in silky coverings, is a choice and not common plant. *Hechtia texensis* is to be seen in almost every collection and while common, it is, at the same time, one of the more attractive plants and perhaps the most formidable of all. Its dark bronzy-green upper surfaces with its silvery striped under exposures gives it the appearance of being carved from jade; however, its wicked retrosely-barbed spines might well merit the name "Texas devil." The *Aloe dinteri* is a rare plant, and a beauty.



CULTURE IN OHIO

September 1-4. In Spencerport, New York, to see Gene, Violet and Suzette Ziegler. Gene's collection is now mostly specimen plants of cacti and Euphorbias housed in his automatically heated and ventilated greenhouse. One of the first of the eastern cactophiles to import seed from Ferdinand Schmoll and raise his own seedlings. I bought my first rare plants from him in March, 1931. He was one of the first advertisers and contributors to our JOURNAL. Looked over Volume I and reread his articles on raising cactus plants from seed. Those were the days when methods were yours by the trial and error medium. His imported plants are now magnificent specimens which have survived in his greenhouse for 10-15 years under varying conditions. Gene has concluded that if a plant dies after several trials it is not suited to greenhouse culture "so I just forget it," he says. His present cactus collection is healthy in a rich well-drained soil which he keeps on the dry side. His Euphorbias are quartered with the orchids where they get good light and plenty of water. The growth of these plants is indicative of good health. Visited Mrs. Watson in Webster, New York. She has some of the healthiest plants for sale that I have seen. Housed in a low greenhouse with seven foot high center aisle and beds of sandy soil on either side. Ventilation is excellent. Spine color rich and colorful. She claims no special aptitude for raising cacti and succulents. "Just plant sense," she says. A *Nyctocereus serpentinus* with white spines and two buds attracted me, but I let "well enough alone," knowing as I do buds don't like to be moved and travel should be with little baggage these days.

Brought home a fine lot of plants from Gene—*Euphorbias: bulbalina, abyssinica, polygona; Huernia occulata* var. *Rogersii* and fifteen cuttings of succulents and cacti. Just a few, you know, won't take any room —same old story—cactusitus. Such an enjoyable time as only a real family can give. Complete relaxation, enjoyable side trips, Violet's cooking and Suzette's salad did the trick. I came home rested and ready for work.

September 9th. Back at work—too—school began today. Happy? Read E. J. Alexander's culture of succulent plants in "Succulent Plants of New and Old World Deserts" with interest. It's an amateur's dream for conciseness and helpful hints. It's based on the thesis "Growing plants is not enough but to keep them in good health and with regular flowering periods, it is well to know something of their culture." He advocates pot-within-pot with sand between, plunged in sand or dirt, or glazed pots with good side drainage. I have used all three methods and I find anyone of these is successful providing drainage is good. There are over a hundred photographs of plants which most of us would like but for lack of money, room, etc., why we just look.

September 12. Kleinia gomphophylla, a creeper with egg-shaped leaves in my collection is growing. Professor La Port sent it to me in July, 1942. Alexander in his book states in June, 1942, "so far this has not arrived in the United States." Brings up interesting trains of thought.

September 13. Potted up 10 Euphorbia cuttings I rooted in sand. Haven't lost any since I dip them in "wetting-sulphur" before putting them in my sand boxes. I also sterilize the sand by the way—double precaution, but Euphorbias are, after all, not of the proletariat—you know. I use the same coarse sand in all of my cutting boxes. Sulphur works on any cutting, I find, but especially on Euphorbias because of slow rooting. I have some that were over a year before growth commenced.

September 14. Remembered the injunctions of a Danish friend of mine—"never use anything but rain water on any kind of seed-bed"—and watered my newly planted pots of precious *Epiphyllum ackermannii* x *Echinopsis albiflora* seed (see Aug. 29, 1943, diary). (X *Aporocactus flagelliformis* fruit not ready so far, but it is a rich, blackish-purple now). He bases his opinion on ruffled Petunias not cacti, but I'm wondering if I'll not miss the fight with that good green—algae which develops in our Lake Erie water—I hope so.

September 17th. "Ear-marked" a few choice duplicate plants G. S.; E. S. and K. K. today. George Schneidl, Ernest Schmidt and Kenneth Kline are three young fellows who have joined Uncle Sam's forces for the duration. If we with plants want to do something, let's establish a "trust-fund" of plants for the Army-Cactophile and help them re-establish their hobbies, when they come back—I'm doing it now.

September 19th. Zygocactus truncatus budded. The earliest it has ever bloomed for me was October 19th, 1940. Has a round ovary. Is much prettier than the regular Christmas Cactus in my collection. Always blooms at least a month earlier, too. Hangs from the grape arbor frame all summer then from the roof of the greenhouse. Doesn't like dry air nor too much water on the roots. I keep several small plants as I find they bloom better than the larger ones.

Culture Cues for October

1. Check daily weather reports and diary for past low temperatures—have a weather-eye for quick moving of plants from grape arbor, side porch and open bed to protection.
2. Begin closing ventilators before going to bed.
3. Repaint inside exposed surfaces for "drip-protection."
4. Spray and dry out all plants before storing in basement.
5. Dust with "wettable-sulphur" and store "southwesterns" in basement and let them rest.
6. Mark pots of all plants that remain dormant from October to February in greenhouse. Water others regularly.
7. Keep cutting box of ordinary types to satisfy young collectors and neighborhood children.
8. Use temporary types of heating until absolutely necessary and conserve on hard coal.
9. Begin watering *Zygocactus truncatus* and feed it, too.
10. Give special attention to the following plants that have bloomed in October in past years. Cactus: *Epiphyllums oxypetalum, pitteri, grandiflora, macopterum, darrahii, anguliger, cartogense; Hamatocactus: setispinus, homatocanthus; Echinopsis: albiflora, fiebrigii; Zygocactus truncatus; Rhipsalis houletiana; mammillaria dolichocentra, camptotricha, Lepismium cruciforme; Astrophytum asterias.* Succulents: *Hymenocyclus purpureo-croceus; Stapelias: variegata, grandiflora, comparabilis; Huernia schneideriana, Haworthia tortuosa; Pleiospilos magnipunctatus, optatus; Ceropegia woodii, stapeliformis, barkleyi; Sedum sieboldii* and *Foucaria tigrina.*

WHAT IS THE CEPHALIUM OF MELOCACTUS?

By LEON CROIZAT

The article on the cephalium I have recently published in this Journal (op. cit., 14:169-172. 1942) has invited some criticism. Keen friends have pointed out that while asking what is a cephalium I should have answered my question to the full, dealing with the cephalium of *Melocactus* (*Cactus* of Britton & Rose) together with that of *Cephalocereus* and like plants. This, I have been told, I failed to do, leaving my subject badly unfinished.

This criticism is deserved. I should have closed my article with the statement that it was my intention to deal with the cephalium of *Melocactus* at some later date. To handle this peculiar structure without loss of valuable print, it was necessary for me to take up at first certain generalities on the nature of the cactoid body. These generalities are now off the press (op. cit., 15:37-42, 1943), and I can refer to them making the task at hand much lighter than it would be otherwise. Naturally, I should have taken the reader into my confidence promptly, informing him that more was to be written on the cephalium of *Melocactus* in the near future.

In my last article I have brought to light the fact that the nipple (or podarium) of a cactus conceals within its fleshy folds different kinds of bud, some altogether incapable of flower-bearing yielding glands or mere prickles (which are specialized bud-scales), others—on the contrary—very much alive and fit to bring forth either new growth or flowers. These three buds are shown in Fig. 1 as *a* (sterile bud, or spiny areole), *b* (vegetative bud, producing growth but no flowers), *c* (floral or fertile bud, yielding flowers). These buds are designated in the adjoined sketches by the same letters throughout.

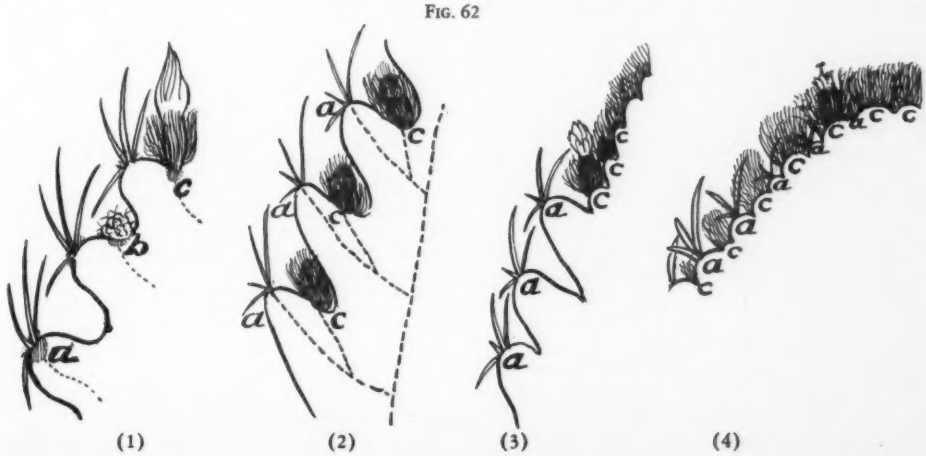
Let us now forget for a moment the buds that bring forth new growth, taking a cut through an echinocactoid plant in blossom, a *Coryphantha,* for instance. We see what Fig. 2 reveals, namely, a succession of sterile buds (that is, spiny areoles) and fertile bud (flower-bearing "eyes").

With this as our starting point, we have a possibility before us. Let us suppose that sterile buds develop no longer, and that beyond a certain point in the growth of the plant, all buds that come bear only flowers. The result is illustrated by Fig. 3, and is a cephalium of *Melocactus.*

The cephalium, then, is primarily a specialized part of the body of a cactus in which all buds bear flowers or, at least, are capable of bearing flowers. Unlike other cacti, in which the sterile and the fertile bud go together when the plant is mature, in *Melocactus* the two eventually divorce. As everybody knows, the "eye" that bear flowers in a cactus is woolly or hardly spiny. Is it surprising, then, that the cephalium of *Melocactus* should be woolly, with barely few, weak spines scattered here and there in its mass? Imagine a *Mammillaria,* with the flower-bearing "eyes" in place, and the prickly tips of the nipples lopped off, and you have before you the live image of the cephalium of *Melocactus.*

As it is well known, cactus such as *Echinocactus ingens, E. horizonthalonius* and the like carry on their heads a woolly cap, suggesting strongly a cephalium of *Melocactus.* This cap

FIG. 62



is indeed a cephalium of sorts, a temporary, not a permanent one. The flower-bearing areoles develop first, as shown in Fig. 4, being followed in alteration by sterile areole with spines. Naturally, such a cactus always carries a "cephalium" when it has reached mature age, but this "cephalium" constantly flattens out—melts at the sides as it were—ultimately yielding normal vegetative growth.

With this, my subject is finished. Before closing it, however, I must take care of a few trimmings. Nature dotes on trimmings after the main job is done, and like a good song writer always repeats the same tunes, so cleverly camouflaged and so varied that the innocent public believes to hear something new at all times. To follow the ways of nature we must pay careful attention to these trimmings.

The flower-bearing, much modified shoots found on the sides of *Neoraymondia* and *Myrtillocactus* (see my previous article, 14:171, figs. 4 and 5) are cephalia like the top of a *Melocactus* because they, too, are parts of the plant from which nothing comes out but flowers. If the reader looks at Britton & Rose's "Cactaceae" Vol. 3, p. 218, he will notice that Fig. 233 illustrating *Discocactus placentiformis* shows precisely the same kind of growth which sprouts from the areoles of *Myrtillocactus* and *Neoraymondia.*

The worst shortcoming in everything which has so far been written on the Cactaceae is the great lack of attention paid to the structure of the cactus body as such. What is the use of telling the world that such and such genus is recognized by a "cephalium," when the cephalium is not understood. and everything that is woolly at the head of a cereoid or echinocactoid plant, rightly or wrongly, passes for a "cephalium?"

Is it possible to draw an absolute distinction between the cephalium of *Melocactus* and similar structures present in other echinocactoid plants? My answer in all candor is that I do not know, but suspect that this cannot be done. There must be endless degrees of evolution between the clean-cut permanent cephalium of *Melocactus intortus,* for instance, and the false "cephalium" of *Echinocactus ingens,* plants in which sterile growth, though much subdued, continues within the cephalium's folds. Last year I witnessed a peculiar happening. A collected old plant of *Hamatocactus setispinus,* probably happy to eat and to drink its fill, blossomed so continuously and so closely that once the flower-buds stopped forming, the top itself had gone, leaving in the place of the growing tip a neat hole, like the crater of a miniature volcano. A confirmed bachelor among my friends commented on this strange event that plants. too, seemed to lose their heads for reproduction's stake. True indeed, and more. In this cactus the "cephalium" blew itself up, that is, the entire upper end of the plant behaved like a flower-cluster of Wisteria that dies off immediately after having performed its functions. While in *Echinocactus* the growth of sterile buds (spiny areoles) is slowed down to make place to the growth of flowering ones; while in *Melocactus* sterile buds evolve no more, and only flower-bearing ones appear, in this particular *Hamatocactus* neither sterile buds nor flower-buds were left after the blossoming period had spent itself. I can find no other account for this happening, accidental damages or disease being out of the question; what I surmise is quite in line with the fact that the tendency to specialize the top of the plant for flower-bearing is rampant throughout the echinocactoid clan, reaching its peak in *Melocactus* only. Naturally, the presence of such a tendency —all exaggerations aside—gives rise to the suspicion that the hundreds of forms in this vicinity run one into the other, for a tendency that is at work within a group is not likely to be narrowly confined, although it may be revealed to the fullest only in certain plants. I believe, for instance, that it would be worth our while to study *Discocactus* in an exhaustive and critical manner. Britton & Rose put *Discocactus* and *Melocactus* (Cact. 3:216. 1922) together, commenting that these two groups are not closely related but have both a "terminal cephalium." By taking a mere glance at such figures as that of *Discocactus heptacanthus* (op. cit. 218 Fig. 232), and *D. alteolens* (op. 216 cit. 229), we are led to wonder whether this "cephalium" is the same as that of *Melocactus Zehntneri* (as *Cactus,* op. cit. 236 Fig. 248), or rather a "cephalium" like that of *Malacocarpus tephracanthus* (op. cit. Pl. xx Fig. 1). What about the most peculiar growth of *Discocactus placentiformis* of Fig. 233? These are not idle questions but precise requirements of good classification, because it is on the answer we give these questions that depends whether a plant goes under a genus or another.

Validation of *Opuntia rhodantha* Schum. var. *spinosior* Boissevain & Davidson

Through an oversight, no Latin description has been given for the publication of our *Opuntia rhodantha* var. *spinosior.* To validate the English descriptions and notes previously published (Colorado Cacti 29. 1940), we append here the necessary Latin description:

Opuntia rhodantha Schum. var. *spinosior* Boissevain & Davidson.

Areolis omnibus aculeis porrectis 4 vel ultra praeditis. Southwestern Colorado Desert, Cortez.

CHARLES H. BOISSEVAIN.

SPINE CHATS

LADISLAUS CUTAK

Garrabrant is a fairly common name in New Jersey. One of the possessors of this name was an old Dutch settler who established himself in what is now the thriving town of Bloomfield. Like many an old-time Hollander he raised a big family. One of our subscribers, Arthur W. Garrabrant, is most likely descended from this old Dutch farmer. In continental Europe, Hollanders were among the earliest patronizers of cacti and succulents. Now we can readily see why Art Garrabrant of the New Jersey Cactus and Succulent Society became a cactus fan. Several years ago he had a chance to get a number of sash from a place nearby that was being wrecked and built a small lean-to glasshouse. Shortly, he began to experiment with seeds of all the out-of-the-ordinary plants he could obtain. Among the lot were some seeds of *Cereus peruvianus* and their difference from other plants and rapid growth attracted him to them so that he began to look for more cactus seed. One of the original seedlings now stands in the corner of the now enlarged house and is considerably above his head. Last fall Garrabrant had about 100 different cacti and succulents. At present he does not know how many new species were added but the number was considerable. Several of the New Jersey club members have gone into service leaving many plants with him. I asked him about his pet cacti but he admitted it was difficult to pick favorites. However, he thinks the following would rank at the top for him: *Mammillaria,* for the ease in raising its species from seed; *Echinocereus,* for the spines and flowers, having been successful in getting some flowers from them under glass; *Rebutia,* for quick-blooming seedlings; and *Notocactus,* for the trim little plants which are fairly fast growing.

* * *

Cacti and other succulents have been the chief hobby of Mrs. Maybelle Place, corresponding secretary of our national organization, for more than 10 years. Euphorbias are her pets and through her generosity I was able to obtain two additional slipper spurges, *Pedilanthus calcaratus* and *P. padifolius,* for our collection at Missouri Botanical Garden. Next in her favor are the dainty Haworthias, while her collection of Epiphyllums consists of 14 of the true species described by Britton and Rose and a greater number of the beautiful hybrids. Mr. Place helps her with the plants, builds the glass houses, but he isn't interested in growing the cacti; his hobby is desert travel and seeing the plants growing in their native home. Both of them have had some wonderful trips together.

* * *

Readers of this column, particularly those who have outdoor cactus gardens or who plan to have them, might be sufficiently interested in two desert shrubs which have proven to be hardy as far north as St. Louis. The two shrubs are *Berberis trifoliolata* and *Chilopsis linearis.* The former is a holly-like, evergreen bush, popularly known as agarita or chaparral berry. It grows in the Big Bend country and extends into Mexico. It makes an excellent hedge. The latter is a willow-like shrub or small tree, possessing by far the showier blossoms. The Texas Highway Department has used it in large quantities for highway planting. I think it is my duty to bring these two outstanding plants to your attention and if further interested you might want to read my article, "Two New Desert Shrubs for Midwest Gardens" in the June, 1943, issue of the Missouri Botanical Garden Bulletin.

* * *

Shortly before the invasion of Sicily the islands of Pantelleria, Lampedusa and Linosa leaped into the news like some undiscovered atolls but their names were memorized by school children of past ages in Rome and Carthage. Perhaps to *Stapelieae* enthusiasts the two latter islands were not unfamiliar for *Caralluma europeae* grows wild there. Two other stapeliads are known to exist in Europe, native to southern Spain, *C. europeae* var. *confusa* and *C. Munbyana* var. *hispanica.*

* * *

Almost every month I bring to your notice some new cactus, succulent or desert plant. Whether these new plants will be accepted as distinct by the majority of cactophiles will remain to be seen. It is not the wish of this columnist to pass upon the merits of the new plants. My purpose is merely to inform you of the new species and varieties which come into existence from time to time. Dr. Ira W. Clokey is the author of three new names in the *Cactaceae.* All three plants hail from the Charleston Mountains in southern Nevada, and include *Opuntia multigeniculata, O charlestonensis,* and *Coryphantha rosea.* For further details see Madroño 7:67176, July, 1943.

* * *

Desertariums don't grow as easily as this

I am a great advocate of desertariums and have written three or four articles on the subject in various publications. A few years ago the Gardeners' Chronicle of America published an article of mine, entitled, "Desert Terrariums" (October, 1939). Shortly after I received a letter from a reader in Pennsylvania, excerpts of which I quote here: "Dear Mr. Cutak, I enjoyed reading your story in the Gardeners' Chronicle. I am asking you to send me some seed of the desertarium or at least inform me where they can be secured." Gosh! and I thought that I write lucidly enough not to be misinterpreted. Oh well, this gave me an idea for a cartoon. How do you like it?

SPECIAL THIS MONTH

Beautiful seedlings of rare foreign cactus, 8 for $1 postpaid or all 20 for $2 postpaid. Perfect for winter bowls for the house.

Mammillarias: *Baumii, camptotricha, bocasana, compressa, kewensis, lindsayii, rhodantha, mendeliana, sphacelata tarajaensis, uncinata, woodsii; Astrophytum myriostigma; Notocactus haselbergii, apricus, leninghausii and submammulosus, Coryphantha clavata; Trichocereus huascha; Echinocactus grusonii.*

Free illustrated catalog No. 6
Californians 3 Percent tax, please
KNICKERBOCKER NURSERY
6065 Broadway, San Diego 2, Calif.

JOURNAL BARGAINS

We have the following *bound* JOURNALS with Britton and Rose sections bound in (each volume contains the installments of "The Cactaceae" that appeared that year). Brand new: Four copies Vol. III (scarce, regular price $9) $5.50 each. Two copies Vol. IV (regular price $6) $4.50 each. Four copies Vol. V (regular price $6) $4 each.

Complete your JOURNAL files now while we have odd copies. After this year only bound volumes will be available.

CACTACEAE (or Naming Cacti)—Marshall & Bock, 250 pages 9x12. 160 photos and 30 plates containing drawings of 146 genera. 1941. Supplementing the work of Doctors Britton and Rose, this volume describes all of the new genera and species since 1919, and the changes in nomenclature necessitated by recent discoveries. Tells the chief differences between the varied groups, or genera. Illustrated keys of all genera make classification understandable. This book is a necessity to collector, student and botanist. Bound in heavy art linen, $5.10 post paid.

"TEXAS CACTI" AVAILABLE

We have been fortunate in securing ALL of the remaining copies of this valuable reference book which has been impossible to obtain for the last three years. After this supply is exhausted no more copies will be sold except as a rare book item. This book is so valuable that we have bound copies only, available at $3.00

THE GARDEN DICTIONARY (1936)—Norman Taylor. 800 pages. Indexed. Fabrikoid.....$8.50

Van Laren's "Succulents"—original edition in Dutch $25.00

BLANC'S CATALOG—A rare item.....$15.00

SCOTT HASELTON
Box 101, Pasadena, California

EPIPHYLLUMS. To dispose of all of my fine plants, I offer 12 to 15 in. cuts of well known Epiphyllums at 10c and 20c. No order less than $2. Express collect. Large plants $1.00 to $1.50. F.O.B. Los Angeles. Greatest opportunity to start a large collection. H. M. Wegener, 1190 Leighton Ave., Los Angeles.

CACTACEAE WANTED

I will take your used 4 volume green set and send you a new 4 volume Deluxe set in exchange for a difference of $15.00.

The new Marshal-Bock volume matches the Deluxe binding and this will enable you to acquire a matched set. Write for your free copy of my book catalog.

"BOOK-MARK"
825 Elyria Drive Los Angeles, Calif.

COMMERCIAL DEALERS

QUALITY HILL CACTUS HOME
CACTUS AND SUCCULENTS
559 Evanston Ave. Kansas City, Mo.

FITZPATRICK'S CACTUS GARDENS
CACTUS AND SUCCULENT PLANTS, RETAIL
Route 3 Edinburg, Texas

KNICKERBOCKER NURSERY
CACTI AND SUCCULENTS
6065 Broadway San Diego, Calif.

VENTURA EPIPHYLLUM GARDENS
EPIPHYLLUMS
153 McFarlane Drive Ventura, Calif.

J. C. RUTENSCHROER FLORAL COMPANY
WHOLESALE CACTI AND SUCCULENTS
West Price Hill Cincinnati, Ohio

KENNEDY'S CACTUS GARDEN
WHOLESALE CACTI AND SUCCULENTS
1765 Stanley Ave. Long Beach, Calif.

F. I. CARTER & SONS
WHOLESALE AND RETAIL GROWERS OF CACTI AND SUCCULENTS
Tewksbury Massachusetts

TEGELBERG CACTUS & SUCCULENT GARDENS
WHOLESALE AT NURSERY ONLY
600 West Kelso St. Inglewood, Calif.

HOWARD E. GATES—Famous Cactus Gardens
CACTI AND SUCCULENTS—STRICTLY WHOLESALE
P. O. Box 247 Corona, Calif.

ALBERT AROZENA NURSERY
WHOLESALE GROWERS CACTI AND SUCCULENTS
1518 E. Rosecrans Compton, Calif.

TEXAS CACTUS GROWERS
WHOLESALE MEXICAN AND U. S. CACTI
Box 1325 Laredo, Texas

CACTUS PETE
CACTI, SUCCULENTS, AND EPIPHYLLUMS
5440 Valley Blvd. Los Angeles, Calif.

CACTUS AND SUCCULENTS

Ask for our new 1943 plant and seed catalog. Enclose 10c to cover cost and deduct from first order.

R. W. KELLY
Box 235-C, Temple City, Calif.

VALUABLE REPRINT AVAILABLE

In order to supply the demands for additional copies of Dr. Benson's article, "The Goal and Methods of Systematic Botany," we have a few bound into 16 page self-cover booklets at 25c each.

BOX 101, PASADENA, CALIF.

* * *

CLOSING OUT CACTUS BUSINESS

Collection of 100 different Mexican cacti $15.00 Or 50 kinds including a crest $8.50. These are mature plants of good form and size—no seedlings. Get permit from your Dept. of Agriculture. Our ranch, gardens, cacti, 2 wells, 5 greenhouses and four houses for sale. Show plants and specimens in abundance. If interested make an offer.

FERDINAND SCHMOLL
(Citizen of Mexico and Member of Cactus Society)
Cadereyta, Quo., Mexico